

What is claimed is:

1. A process for transforming organic carbon into removable carbonate and/or oxalate in Bayer process liquor comprising:

controlling the temperature and viscosity of said Bayer process liquor within selected ranges,

substantially reducing foam formed by said Bayer process liquor and causing said transfer by contacting an ozone-oxygen mixture with the Bayer process liquor, and

substantially eliminating excess ozone in offgas produced by the Bayer process liquor.

2. The process according to claim 1, wherein said ozone-oxygen mixture is dispersed into the Bayer process liquor in the form of bubbles.

3. The process according to claim 2, wherein said ozone-oxygen mixture is dispersed by a venturi.

4. The process according to claim 1, wherein said foam is further reduced by a mechanical foam reduction system.

5. The process according to claim 1, wherein said foam is further reduced by an antifoamant.

6. The process according to claim 1, wherein the temperature of said Bayer process liquor is about 50°C to about 80°C.

7. The process according to claim 1, wherein the temperature of said Bayer process liquor is about 50°C.

8. The process according to claim 1, further comprising substantially increasing the amount of removable carbonate and oxalate in already existing precipitation steps from said Bayer process liquor.

9. The process according to claim 1, wherein said substantial elimination of excess ozone in the offgas is performed by a gaswasher.

10. A process for decoloring Bayer process liquor comprising:

controlling the temperature and viscosity of said Bayer process liquor within selected ranges;

transforming color containing organic carbon in the Bayer liquor into colorless carbonate and/or oxalate by contacting an ozone-oxygen mixture with the Bayer process liquor;
and

substantially eliminating excess ozone in offgas produced by the Bayer process liquor.

11. The process according to claim 10, wherein the ozone-oxygen mixture substantially reduces foam formed by the Bayer process liquor.

12. The process according to claim 10, wherein the temperature of said Bayer process liquor is about 50°C to about 80°C.

13. The process according to claim 10, wherein the temperature of said Bayer process liquor is about 50°C.

14. A process for enhancing efficiency of removing alumina hydrate from Bayer process liquor comprising:

controlling the temperature and viscosity of said Bayer process liquor within selected ranges;

increasing the solubility of the alumina hydrate by reducing the amount of organic carbon in the Bayer process liquor; and

precipitating increased quantities of alumina hydrate by cooling the Bayer process liquor.

15. The process of claim 14, wherein the organic carbon is reduced by transformation into removable carbonate and/or oxalate.

16. The process of claim 15, wherein the organic carbon is transformed by contact with an ozone-oxygen mixture.

17. The process according to claim 14, wherein the temperature of said Bayer process liquor is about 50°C to about 80°C.

18. The process according to claim 14, wherein the temperature of said Bayer process liquor is about 50°C.

19. The process according to claim 14, wherein the ozone-oxygen mixture substantially reduces foam formed by the Bayer process liquor.